

Remarks

Claims 1-5, 10-20, 24-26, 28-32, and 34 were pending in the subject application. By this Amendment, the applicant has amended claims 1, 17, and 34 and canceled claims 12 and 24. Support for these amendments can be found throughout the original specification and claims including, for example, at page 9, lines 10-15. Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 1-5, 10, 11, 13-20, 25, 26, 28-32, and 34 are currently before the Examiner.

The amendments to the claims have been made in an effort to lend greater clarity to the claimed subject matter and to expedite prosecution. These amendments should not be taken to indicate the applicants' agreement with, or acquiescence to, the rejections of record. Favorable consideration of the claims now presented, in view of the remarks and amendments set forth herein, is earnestly solicited.

Claims 1-5, 10-20, 24-26, 28-32, and 34 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. By this Amendment, the applicant has amended claims 1, 17 and 34 to remove the word "about" before 180 °C, as suggested by the Examiner. Accordingly, reconsideration and withdrawal of the rejection under §112, first paragraph, is respectfully requested.

Claims 1-5, 14, 15, 17-20, 26, and 34 have been rejected under 35 U.S.C. §102(b), as being anticipated by Gillespie (U.S. Patent No. 5,783,503) as evidenced by Tortora (*Understanding Textiles*, pages 38, 39, and 402). The applicant respectfully traverses this ground for rejection because the cited reference does not disclose (or even suggest) the applicant's advantageous method as now claimed.

By this Amendment, claims 1 and 17 have been amended to recite that "the static level measured at about one half inch below the outlet of the slot attenuation device is between about -2 kilovolt per inch and about 2 kilovolt per inch." This element is neither taught nor suggested by Gillespie, even when viewed in light of Tortora. The applicant notes that this limitation was previously presented in claims 12 and 24, and this rejection was not applied to those claims.

As the Examiner is aware, it is well established that in order to anticipate, a single reference must disclose within the four corners of the document each and every element and limitation contained in the rejected claim. *Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991). Accordingly, reconsideration and withdrawal of the rejection under §102 is respectfully requested.

Claims 1-5, 14, 15, 17-20, 26, and 34 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Gillespie in view of Tortora (*Understanding Textiles*, pages 153-157, 330, 401, and 402). The applicant respectfully traverses this ground of rejection because the references, either taken alone or in combination, do not teach or suggest the applicant's method as now claimed.

The Action states that it would have been obvious to use the antistatic metal or carbon of Tortora in the Gillespie fibers. By this Amendment, claims 1 and 17 have been amended to recite that "the static level measured at about one half inch below the outlet of the slot attenuation device is between about -2 kilovolt per inch and about 2 kilovolt per inch." As discussed by the applicant in the Amendments of April 24, 2008 and August 4, 2008, a very high amount of carbon black is required to see any appreciable anti-static effect. Also, it is well-known in the art that using carbon black in the melt stream of a polymer, especially in high proportions, would severely plug filters and packs. Due to these factors, a skilled artisan would not have found a reason to combine Tortora's synthetic fibers with the process of Gillespie.

The mere fact that the purported prior art could have been modified or applied in some manner to yield an applicant's invention does not make the modification or application obvious unless "there was an apparent reason to combine the known elements in the fashion claimed" by the applicant. *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007). Also, an applicant's invention is not "proved obvious merely by demonstrating that each of its elements was, independently, known in the (purported) prior art." *Id.* As discussed above, a skilled artisan would not have had a reason to modify the teachings of Gillespie and Tortora to arrive at the claimed invention, including the addition of enough carbon black to observe the quantitative static level claimed.

In addition, the applicant notes that this rejection was not applied to claims 12 and 24, each of which contained the static level limitation now present in independent claims 1 and 17. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a) based on Gillespie in view of Tortora is respectfully requested.

Claims 1-5, 10-20, 24-26, and 28-32 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Gillespie in view of either Warburton (U.S. Patent No. 4,081,383) or George (U.S. Patent No. 4,167,464). The applicant respectfully traverses this ground of rejection because the cited references, either taken alone or in combination, do not teach or suggest the claimed invention.

The Action states that Gillespie teaches to incorporate into the polymer melt components to control electrical properties, citing column 5, lines 35-42. However, Gillespie is primarily concerned with producing splittable filaments (see, e.g., column 5, lines 38-39), and the only additives to control electrical properties contemplated by Gillespie are those that might increase static buildup at the outlet of an attenuation device. As Gillespie teaches at column 9, lines 53-63, “[a] triboelectric charge can be developed in the filaments to promote separation... [a] nylon component can develop such a static charge... (and) [a]n external electric field can be applied to the filaments... to augment the separation” (emphasis added). Thus, Gillespie teaches away from any additives that would lower the static level at the outlet of an attenuation device since that would inhibit separation of the filaments, in direct contrast to the goal of the Gillespie process.

The Action also asserts that it would have been obvious in view of Warburton *et al.* to add a 1% concentration of a dodecane-1-sulfonic acid sodium salt to the melt of the Gillespie process in order to provide the product with better anti-soiling properties. Warburton *et al.* teach a composition and method for improving soil resistance of carpets and all reactions take place at low temperatures. As Mr. Ortega discusses in his Expert Declaration submitted October 12, 2007, it is well known in the art that spunbonding processes must be accomplished above the melt point of the polymers used, which is often above 200 °C. Every composition disclosed by Warburton *et al.* includes methacrylic acid. The applicants have attached hereto as evidence a reference sheet for methacrylic acid prepared by BASF. As shown on the BASF

reference sheet, the flash point of methacrylic acid is 73 °C, which is significantly less than half of the temperature at which melt blends are kept in spunbonding processes.

As the flash point of methacrylic acid is 73 °C, no melt blend including this would ever be used in a spunbonding process, due to the immense safety hazard. Warburton *et al.* teach coatings for carpets or yarns that all contain methacrylic acid. There is no suggestion in Warburton *et al.* or Gillespie that any of the emulsifiers listed in column 5, at any concentration, taken alone would impart any advantageous properties to any type of fabric. Thus, there is certainly no teaching or suggestion found in the combination of cited references that would have given a skilled artisan a reason to cherry-pick the one emulsifier cited by the Action and use it in the melt blend of a spunbonding process, like the one taught by Gillespie. As is known in the art, spunbonding processes are quite different than processes for the production of carpet yarns. A skilled artisan would not have found a reason nor an expectation of success to use a compound disclosed in a carpet yarn process for the production of a spunbonded nonwoven fabric.

Nevertheless, even if the methacrylic acid-emulsifier combination were added to the melt blend in the Gillespie process, aside from the dangers that would be present in the form of noxious vapors (see BASF reference sheet, bottom of first page, middle column), the improved static level of claims 1 and 17 would still not be observed. The compound taught by Warburton *et al.* to impart anti-soiling properties is a methacrylic acid emulsion copolymer; thus, the emulsifiers listed at column 5 of Warburton *et al.* would not be added to the Gillespie melt blend, but rather a copolymer with methacrylic acid. Thus, the results given in Table 1 of the applicant's specification would not be achieved since the same additive is not being used. As any skilled artisan would understand, when you change the chemical composition of an additive any properties it imparts will be very different.

Furthermore, with respect to George, the George reference teaches the preparation of highly water absorbent films and fibers by photopolymerizing various compounds. The Action asserts George teaches using a copolymer that contains sodium salts of dodecane-1-sulfonic acid and that it would have been obvious to include such a copolymer in the extrusion of Gillespie in order to provide the product with better absorption of water and other bodily

fluids. However, there is no reason a skilled artisan would expect one of the films of George to maintain its water absorbency properties after going through the extremely high-temperature processes involved in spunbonding. Even assuming, for the sake of argument, that one would have turned to George for a suggestion of improving the absorbency properties of a spunbonded fabric, it would only make sense to apply the film coating of George to the finished fabric since then a skilled artisan could ensure that the George compound would retain its properties. A skilled artisan would have found no reason whatsoever to include any of the George compounds in the melt of the Gillespie process.

Additionally, similar to the discussion above with respect to the methacrylic acid of Warburton *et al.*, George teaches interpolymers containing acrylic acid, the flash point of which is 68 °C, even lower than that of methacrylic acid (see, e.g., [http://en.wikipedia.org/wiki/Acrylic\\_acid](http://en.wikipedia.org/wiki/Acrylic_acid) ; <http://www.npi.gov.au/database/substance-info/profiles/6.html>). No melt blend including this substance would ever be used in a spunbonding process, due to the safety hazard. There is no suggestion in George or Gillespie that any of the compounds listed in the paragraph bridging columns 4 and 5, at any concentration, taken alone would impart any advantageous properties to any type of fabric. Thus, there is certainly no teaching or suggestion found in the combination of cited references that would have given a skilled artisan a reason to cherry-pick the one compound cited by the Action and use it in the melt blend of a spunbonding process, which is not even contemplated by George. Instead, as discussed above, if a George compound was going to be used in the Gillespie process, it would only be used (and only be safe to use) as a coating on the final fabric, not in the melt blend.

Thus, considering the combination of cited references, a skilled artisan would not have had a reason to include any of the substances taught by Warburton *et al.* or George in the melt blend of Gillespie. Even if one of said substances was (dangerously) included, the static level of claims 1 and 17 still would not be achieved. Accordingly, reconsideration and withdrawal of the rejection based on Gillespie in view of either Warburton *et al.* or George is respectfully requested.

In view of the foregoing remarks, the applicant believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

The applicant also invites the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,



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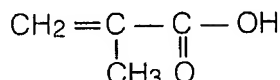
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Attachments: Request for Continued Examination  
BASF methacrylic acid reference sheet

## Technical Data Sheet

January 1997

Formula:.....  $C_4H_6O_2$   
 Molecular Weight:..... 152.2  
 Product Number:..... 008371  
 CAS Registry Number:..... 79-41-4



### Description

Glacial methacrylic acid is a clear, colorless liquid (above 16°C) with a penetrating odor.

### Safety

The normal precautions relating to handling chemicals and local regulations on industrial hygiene must be observed. Measures must be taken to avoid inhalation and contact with the skin or mucous membranes.

The consequences of swallowing methacrylic acid glacial are burns in the oral mucous membranes and intestinal tract.

LD50 oral (rats): 1600 – 2200 mg/kg

Methacrylic acid glacial causes skin burns. Consequently, all forms of skin contact must be avoided with the product and its solutions, e.g. protective gloves must be worn. Clothing splashed with methacrylic acid must be immediately changed, and splashes on the skin must be removed with copious water. Methacrylic acid glacial involves the risk of absorption through the skin and causes contact dermatitis.

# Methacrylic Acid, Glacial

Product Specifications	Value	Test Method
Assay, % minimum	99.5	G.C., ex works
Water, % maximum	0.2	Karl Fischer
Color, APHA maximum	20	Pt/Co, ex works
Stabilizer $\pm$ 20 ppm MEHQ	200	

### Physical Properties

Freezing point, °C (approx.)	16
Boiling point, °C	161
Density @ 20°C, g/cm <sup>3</sup>	1.02
Flash point, °C, Abél-Pensky	73
Ignition temperature, °C	365
Refractive index, $n_D$ @ 20°C	1.431
Specific heat (liquid; 20°C), kJ/kg K	1.95
Viscosity @ 20°C, mPa·s	1.4
@ 40°C, mPa·s	1.0
@ 80°C, mPa·s	0.6
Latent heat of evaporation @ 90°C, kJ/kg	456
Heat of polymerization, kJ/kg	768
Caloric value @ 25°C, kJ/kg	22,340
Heat of neutralization, kJ/kg (approx.)	650
Dissociation constant @ 25°C	$3.7 \times 10^{-5}$
Vapor pressure @ 20°C, mbar	0.8
@ 40°C, mbar	3.5
@ 60°C, mbar	13.0
@ 100°C, mbar	101
@ 120°C, mbar	234
Explosion limits, % volume @ 65°C, lower	1.6
Explosion limits, % volume @ 65°C, upper	8.1
Permitted temperature range for use in electrical equipment	T2

Methacrylic acid glacial causes mucous membrane and eye burns, and safety precautions must be adopted to avoid this, e.g. safety goggles should be worn. If splashes enter the eyes, the eyelids must be spread wide apart, and the eyes must be thoroughly irrigated with water for 15 minutes. Afterwards an ophthalmologist should be consulted.

Methacrylic acid vapor causes burns in the respiratory tract to an extent that depends on the amount and concentration, and steps must therefore be taken to avoid its inhalation. Fresh air breathing equipment should be worn if necessary.

Always refer to the Material Safety Data Sheet (MSDS) for detailed information on safety.

### Applications

Methacrylic acid, glacial can be readily polymerized, its presence in copolymers reduces the softening temperature and the hardness and improves the adhesion of surface coatings and adhesives. Since it is a carboxylic acid, it can be converted by conventional methods into

(continued on reverse side)

methacrylates, methacrylamide, N-substituted methacryl amides, and acryloyl chloride.

Polymers containing methacrylic acid are used in a number of applications including:

- surface coatings
- auxiliaries for the leather and textile industries
- flocculants
- ion exchangers

soil improvers (poly-electrolytes)

### Packaging

Available in bulk and 463 lb (net weight) plastic drums.

### Storage & Handling

In order to avoid premature polymerization, methacrylic acid glacial must be stabilized and kept under a blanket of air (not of an inert gas). The storage temperature must not exceed 40°C. When properly stored in a protected storage area, the product can have a shelf life of about 1 year from date of manufacture. The temperature must also not be allowed to fall below 18°C owing to the risk of freezing. If the permissible storage time or storage temperature is significantly exceeded, the product may polymerize spontaneously.

Methacrylic acid glacial polymerizes very readily. In fact, if it is not stabilized, the polymerization reaction can proceed explosively. For this reason, the product is supplied only in the stabilized form. The usual stabilizer is hydroquinone monoethyl ether (MEHQ) in proportions of 200 ppm. As a rule, it is not necessary to remove the stabilizer before polymerization commences. If necessary, its effect can be compensated by an excess of polymerization initiator.

If methacrylic acid glacial has frozen, it must not be reliquefied unless certain precautionary measures are taken. For instance, it may be allowed to thaw in heated rooms in which the temperature does not exceed 40°C. If the necessary facilities are available, warm water may also be used for thawing, but its temperature must not be allowed to exceed 45°C. The use of steam must be avoided under all circumstances.

During and after thawing, it is absolutely essential that the product is kept thoroughly mixed to ensure uniform distribution of the stabilizer and that it is kept saturated with oxygen.

The manufacturer of the methacrylic acid glacial must be immediately consulted if large amounts are frozen.

Although methacrylic acid glacial is not a flammable liquid in the sense of the UNO "Orange Book", it may form explosive mixtures with air at elevated temperatures. For this reason, we recommend that regulations on explosion prevention be observed during storage and processing.

According to the Enclosure I to the EEC Guideline on hazardous industrial substances, methacrylic acid glacial requires a hazard warning label. Hazard warning symbol C.

Always refer to the Material Safety Data Sheet (MSDS) for detailed information on handling and disposal.

**IMPORTANT:** While the descriptions, designs, data and information contained herein are presented in good faith and believed to be accurate, it is provided for your guidance only. Because many factors may affect processing or application/use, we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE. Further, you expressly understand and agree that the descriptions, designs, data and information furnished by BASF hereunder are given gratis and BASF assumes no obligation or liability for the description, designs, data and information given or results obtained, all such being given and accepted at your risk.

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